BEFORE THE
PUBLIC SERVICE COMMISSION OF WISCONSIN

Application of Milwaukee Water Works, Milwaukee County,
For Authority to Increase Water Rates — Docket No. 3720-WR-107

SUPPLEMENTAL REBUTTAL TESTIMONY OF PATRICK PLANTON
July 19, 2010

Q. Please state your name.

A. My name is Patrick Planton.

Q. Have you previously submitted rebuttal testimony in this proceeding?

A. Yes.

Q. What is the purpose of this supplemental rebuttal testimony?

A. After rebuttal testimony was submitted, Milwaukee Water Works filed a revised rate application, and PSC staff prepared a revised revenue requirement, cost of service study, and rate design. In addition, PSC staff submitted supplemental direct testimony. My supplemental rebuttal testimony responds to these revisions and the PSC's supplemental direct testimony.

Q. Have you reviewed the PSC's supplemental direct testimony and revised exhibits?

A. Yes.

Q. Do the supplemental direct testimonies and revised exhibits address the concerns raised in your original rebuttal testimony?

A. A few issues are addressed. However, numerous issues remain, and the supplemental direct testimonies and revised exhibits raise further issues.

Q. What is the first issue you would like to address in response to the supplemental direct testimonies and revised exhibits?

A. I'd like to first address the issue of PSC staff's allocation of contributions in aid of construction (CIAC).

In his supplemental direct testimony, PSC staff, Andrew Behm asserts that it is reasonable to assume that there have been no customer contributions for transmission main additions prior to 2003 because Milwaukee Water Works is unable to prove that there were. Therefore, he applies 100 percent of all pre-2003 CIAC to distribution mains only. (SD12.18, lines 4-9.) I completely disagree with this. I believe that Mr. Behm's approach is not only unreasonable, it is illogical and it discriminates against MWW's wholesale customers.

Q. Why do you believe Mr. Behm's approach with regard to the allocation of CIAC is unreasonable?

A. I am concerned by Mr. Behm's approach for several reasons. One reason is that Mr. Behm's approach significantly deviates from the practice followed in the last MWW rate case, and a sufficient explanation has not been provided for this change.

In the PSC's 2007 Cost of Service Study (COSS), staff assumed customer contributions funded both distribution and transmission mains in equal proportion. (D.12.12, lines 10-12.) This allocation of MWW's historical CIAC established in the 2007 proceeding was not challenged. Now, in this 2010 proceeding, PSC staff's initial COSS (Exhibit 12.2) allocated 100 percent of CIAC to distribution mains. No CIAC was allocated to transmission mains. The result of this change was to substantially increase the amount of utility-financed plant deemed to be useful to the wholesale customers.

Mr. Behm testified that he changed the CIAC allocation methodology used in the 2007 COSS because he believed it was more realistic to assume that customer contributions only funded distribution mains. (D.12.12, lines 6-8, and 15-16.) Mr. Behm offered nothing more than this statement for this significant change in CIAC apportionment methodology. No financial data was provided to support the change in approach, and it is my understanding that PSC staff had not asked MWW to provide any information to support this change, even though CIAC information from MWW would be highly relevant to the issue of how CIAC should be allocated.

The wholesale customers requested MWW to provide them with its available financial information on the CIAC received for distribution and transmission mains. MWW was able to quickly provide information that demonstrated that Mr. Behm's assumption was incorrect, and that CIAC had been received for transmission mains. According to the information provided by MWW, since 2003, 29.3% of the CIAC received was for transmission mains. (Exhibit 2.5.) MWW indicated that before 2003 it did not keep accounting records of whether CIAC was received for distribution or transmission mains.

Based upon this information from MWW, I proposed that all CIAC related to mains be allocated between transmission mains and distribution mains using the 29.3% to 70.7% ratio. Mr. Behm, however, rejected my proposal, stating:

> *The assumption that the experience of seven years can be extrapolated over the life of existing mains is tenuous. It is indisputable the $3,928,480 worth of transmission mains has been funded through contributions, and accordingly I have moved this amount of utility financed mains from transmission to distribution. To make a more general statement about contributions funding transmission mains, though, would be speculation.*

(SD12.18, lines 5-9.) In other words, Mr. Behm expressed PSC staff's intention to stay with the changed allocation method in the proposed 2010 COSS unless there is "indisputable" evidence requiring it to do otherwise.

The position reflected in Mr. Behm's testimony is completely contrary to my understanding of how the PSC is supposed to approach rate-making. It is my understanding that the PSC is supposed to explain its deviations from past PSC practice, and that its changes must be reasonable and not arbitrary. Mr. Behm's testimony, however, does not provide any reasoning on why the deviation from the last MWW rate case is appropriate, other than his statement that he believes it is more realistic to assume all customer contributions are for distribution mains. While PSC staff had the ability to obtain actual financial information from MWW to support an appropriate allocation of CIAC (and demonstrate whether its assumption was correct), this was not done. The PSC's decision to allocate 100% of CIAC to distribution mains is arbitrary.

It is relevant to note that PSC staff adopted other changes in the 2010 COSS related to transmission and distribution mains that appeared to be arbitrary and turned out to be erroneous. The 2007 COSS allocated Plant Account 343, Mains, between transmission mains and distribution mains based upon MWW's actual financial data. This resulted in allocating 40% of Account 343 to transmission mains, and 60% to distribution mains. In the 2010 COSS, however, PSC staff did not ask MWW for its actual financial information on the relative cost of transmission and distribution mains, and instead changed to a formula based upon length multiplied by diameter of mains. (D.12.11, lines 12-14.) This resulted in allocating 53% of Account 343 to transmission main, and 47% to distribution mains. This new allocation methodology (like the new allocation assumption related to CIAC) significantly increased the utility-financed plant deemed used by wholesale customers. PSC

staff did not provide any testimony explaining why staff deviated from the method used in the 2007 COSS, why the new method was reasonable, or why staff did not request MWW to provide actual financial information on relative costs. After reviewing the initial 2010 COSS, the wholesale customers asked MWW for its relative costs for transmission and distribution mains, which MWW was able to readily provide. The actual information showed that 30% of Account 343 was allocable to transmission mains (not 53%), and 70% to distribution mains (not 47%). After this information was brought to the attention of PSC staff, they did revise the COSS to use the actual information. However, PSC staff's willingness to deviate from the methodologies used in the 2007 COSS with little to no justification, and its unwillingness to seek the actual financial information necessary from MWW to make significant cost of service allocation decisions, demonstrates a disconcerting pattern.

Q. Do you have any other concerns with regard to PSC staff's approach to allocating CIAC as reflected in Mr. Behm's supplemental direct testimony?

A. Yes. I am concerned that in light of the absence of specific financial data from MWW, Mr. Behm proposes an allocation that is completely prejudiced, and discriminatory to the wholesale customers. Instead of fashioning a reasonable allocation of CIAC based upon the information that is available, Mr. Behm proposes an allocation that is inconsistent with post-2003 data, which is inconsistent with the CIAC allocation from the 2007 MWW rate case, which is inconsistent with how MWW reports that it funds main additions, and that is discriminatory to the wholesale customers. Under his assumption, every dollar of CIAC received by MWW over its 132-year water utility history prior to 2003 is assumed to have been provided for distribution mains (mains 12" or less in diameter). Mr. Behm rejects my proposal to allocate pre-2003 CIAC based upon the post-2003 allocation, stating that it

would be speculation to extrapolate the experience of seven years of actual data over the life of existing mains. (SD 12.18, lines 4-9.) However, PSC Staff's approach uses no actual data.

By not allocating a fair and appropriate share of CIAC to transmission mains (mains greater than 12" in diameter), Mr. Behm is overstating the value of utility-financed plant used by the wholesale customers, and as a result costs attributed to the wholesale customers are too high.

I am also concerned that Mr. Behm seems to contend that the wholesale customers bear the burden of proving that some amount of CIAC should be allocated to transmission mains -- as opposed to requiring that MWW prove that 100% of pre-2003 CIAC should be allocated to distribution mains. MWW is the party that has requested a rate change, and the PSC is the state agency responsible for setting fair, reasonable, and non-discriminatory rates. The PSC cannot adopt an arbitrary assumption that is not supported by any facts and that is discriminatory to the wholesale customers, and then declare that the arbitrary assumption is entitled to stand unless some other party can provide "indisputable" evidence that its assumption is incorrect.

In the absence of available data, the allocation of pre-2003 CIAC necessarily requires some speculation. The question before the Commission is what are the more reasonable assumptions for allocating contributions. My proposal is based on actual post-2003 data and also the fact that no significant changes in MWW water main funding practices occurred in 2003. PSC staff's proposal requires the assumption that MWW deviated from prior practice in 2003, and also deviated from industry practice. A premise based on a partial- but typical - data set is more reasonable and logical than an assumption based on no data and simply on the appeal of a particular outcome.

Q. Do you have any other comments in response to Mr. Behm's assertion that it is reasonable to assume that there have been no customer contributions for transmission main additions prior to 2003?

A. I do not agree with Mr. Behm's assertion that it is reasonable to assume that 100% of pre-2003 CIAC should be allocated to distribution mains. This assumption is unreasonable given what is known about the addition of mains to MWW's water system, and the development of the City of Milwaukee in general. I believe the following factors indicate that PSC staff's assumption is unreasonable and untenable.

First, we know that MWW's actual financial information on CIAC from 2003 to 2009 shows that nearly 30 percent of all customer contributions for water main additions to the MWW system were for transmission mains (mains greater than 12" in diameter). (Exhibit 2.5.) There is no evidence to suggest MWW's method of financing water main, and requiring the payment of CIAC for water main, changed in 2003. Therefore, it is reasonable to assume that MWW's method of financing water main and collecting CIAC was the same prior to 2003, as it was after 2003.

Second, MWW is an old, long-established water utility, and its Annual Reports document that a significant amount of Milwaukee's water main installation involves the replacement of existing mains. Figure 1-1 (Exhibit 2.27) graphically illustrates a comparison of MWW distribution water main additions and retirements. Since 1997, MWW has added 145 miles of distribution water mains, and has retired 129 miles of distribution water mains. According to footnotes in MWW's Annual Reports, replacements of existing mains are financed with utility earnings, not special assessments. (Exhibit 2.28.) Therefore, we know the vast majority of distribution water mains that are being installed are not paid for with customer contributions.

Third, Milwaukee's Annual Reports also indicate that Milwaukee has a policy of requiring land developers to pay for the infrastructure needed to serve new developments or redevelopments. (Exhibit 2.28.) According to a City of Milwaukee publication describing the policy:

> *Major development projects often require new public improvements such as roads and sewer extensions. In many cases, the required public improvements have not been anticipated by the City in advance of the developer's proposal.*
>
> *In other words, the necessary improvements have not been included in the City's public works capital improvement program. When not already programmed for construction, the needed public improvements can be built through what is called an Out-of-Program Agreement. An Out-of-Program Agreement is a contract between a developer and the City whereby the developer commits to provide funds for the required public improvements and the City agrees to design and construct them. For certain industrial and commercial developments the City will refund a portion of the improvement costs in the year following their completion.*

(Exhibit 2.29.)

MWW's Annual Reports indicate that from 1997 through 2002, financing by land developers totaled $5.2 million of the total $5.4 million in total CIAC over that six year period immediately preceding the new PSC CIAC reporting rules. Only 3% of total MWW CIAC was obtained from assessments. Table 1-1 (Exhibit 2.30) summarizes the CIAC and utility-financed water main projects over the 1997-2002 period. It is very difficult to believe that all $5.4 million of CIAC between 1997 and 2002 was provided solely for distribution mains, while $3.9 million of the $13.4 million of CIAC from 2003-2009 (29.3%) was documented for transmission mains. This is also underscored by the fact that only 3% of the

1997-2002 CIAC was obtained from assessments presumably on distribution mains (assuming all assessments were for distribution mains).

While it is not known specifically how much of this pre-2003 CIAC water main financing was related to mains 12" in diameter and below, and how much related to mains larger than 12" in diameter, my experience is that water mains associated with development and redevelopment projects will often involve mains larger than 12" in diameter. The municipal utility will require facilities be built that are compatible with the functioning of its overall water system. That may include the installation of larger sized mains. In some cases, the municipal utility will fund the oversizing of the mains and will only require a contribution equal to the size of a distribution main, however, even if that occurs, the actual main that is installed would be accounted for based upon its size. In other word, a transmission main would still be booked on the utility's fixed asset records as transmission main, even if the contribution received only covered a portion of the cost of the transmission main. Similarly, the contribution received would be allocated to the cost of the transmission main.

Fourth, MWW's additions to its system have included a significant amount of transmission mains. Between 1960 and 2009, MWW installed 610 miles of distribution mains, and 167 miles of transmission mains. Of the mains installed, 78% were distribution mains, and 22% were transmission mains. Figures 1-2 and 1-3 (Exhibits 2.31 and 2.32) graphically illustrate the comparison of transmission mains added to the MWW system between 1960 and 2009, and the corresponding available transmission main CIAC data. Less than 5 miles (2%) of transmission main were installed after 2002. Based on financial records provided by MWW, between 1960 and 1996, the Utility expended $82.7 million (63%) on the construction of distribution mains, and $49.5 million (37%) on the construction

of transmission mains. Again it is exceedingly difficult to believe that MWW obtained $3.9 million of CIAC on 4 miles of transmission mains added/replaced between 2003 and 2009, and collected zero CIAC on 163 miles of transmission mains added to the system between 1960 and 2002.

Fifth, there have been many large projects in the Milwaukee area over the last 60 years, which may have incorporated the construction of water mains over 12" in diameter. These projects include:

- Milwaukee County Stadium (1953)
- Interstate highway system in the 1950s and 1960s
- Mitchell Field expansion (1950s)
- Milwaukee Zoo expansion (1950s)
- Howard Avenue water treatment plant (1962)
- Bradley Center (1988)
- 3rd Ward redevelopment (1990s)
- MECCA (1990s)
- Menomonee Valley/Potawatomie Casino (2000s)
- Miller Park (2000s)

Any state and federal grant money, or developer contributions received for the construction of water mains larger than 12" in diameter for these developments, would be CIAC attributable to transmission mains. In fact, MWW's 2007 and 2008 Financial Statements attest to the fact that a substantial amount of CIAC was received related to work on the Marquette interchange. (Exhibit 2.59, page 5, submitted with Eric Rothstein's testimony.) It is very probable that similar large infrastructure and building projects over the City's history, similar to the recent Marquette interchange project,

included large amounts of CIAC for transmission mains, including the original construction of the Marquette interchange over 50 years ago.

Fifth and finally, there is documented evidence that proves that MWW received contributions for transmission main projects in the past. I reference a passage from the book, A Century of Milwaukee Water: An Historical Account of the Origin and Development of the Milwaukee Water Works, (1974), by former MWW Superintendent Elmer Becker, that reads as follows: *"Beginning in 1958, action was taken to apply a suburban assessment rate against properties located outside the city that connect to City of Milwaukee water mains in city border line streets. The suburban rate includes some of the cost of 12-inch and* ***16-inch water mains.****" [Emphasis added]* (Exhibit 2.33, page 247.) This historical reference made by and published by a former MWW superintendent in 1974 provides indisputable evidence that directly contradicts PSC staff's assumption that all pre-2003 CIAC was for distribution mains.

Based on the factors discussed above and the preponderance of the historical evidence, it cannot be reasonably assumed that MWW collected zero CIAC for transmission main additions to the system prior to 2003.

Q. Have you changed your position on how you would propose CIAC be allocated in this case?

A. No. I continue to take the position that the most reasonable value for MWW's pre-2003 CIAC for transmission mains would be the post-2003 actual value of 29.28 percent. I believe my position is reasonable because it is based on actual data. If CIAC is allocated to transmission mains as I propose, the costs attributed to the wholesale customers would be more than $220,000 less than what is in the PSC's revised COSS. Table 1-2 (Exhibit

2.34) summarizes the revised wholesale service costs using the PSC's COSS spreadsheet program.

I also believe it would be reasonable, however, to equally proportion CIAC between transmission and distribution mains as the PSC did in 2007. I believe this allocation was consistent with the data research performed and the historical record I have reviewed. I also believe it is relevant that given the opportunity three years ago, MWW did not challenge the PSC staff's previous recommended CIAC allocation methodology.

In no case would it be reasonable to apportion zero pre-2003 CIAC to transmission mains, just as it would not be reasonable to suggest apportioning zero pre-2003 CIAC to distribution mains.

Q. Do you have any other issues you would like to address in response to the supplemental direct testimonies and revised exhibits submitted?

A. Yes. In his supplemental direct testimony, Mr. Behm disagrees with the proposed alternative methods of estimating maximum day to average day system pumpage ratios put forth by Mr. Gorman and me in our original rebuttal testimony. Mr. Behm continues to assert that a ratio of 1.4 is reasonable in this rate case based on historical trends. I do not agree that a ratio of 1.4 is reasonable.

Q. Why do you believe Mr. Behm's proposed ratio of 1.4 is unreasonable?

A. An estimate of 1.4 for the ratio of maximum day to average day pumpage for MWW is unreasonably low and not supported by the historical evidence or benchmarking statistics from other similar national or state water utilities. Use of a system demand ratio that is unreasonably low is discriminatory to large volume users who do not cause MWW to operate and maintain extra capacity facilities.

Q. What is your response to Mr. Behm's criticism of your proposed maximum day to average day pumpage ratio?

A. It is my position that the maximum day to average day system pumpage ratio should be calculated based upon the controlling design parameters for MWW's water system. Standard engineering practice relies upon controlling design parameters when evaluating a system's water supply capacity needs. Controlling design parameters are established based upon sound water supply engineering principles and estimates of current and future system maximum day and average day demands. A water system is built to meet these controlling design parameters, and water system costs should be allocated based upon these design parameters. This is consistent with cost-based ratemaking.

As stated in my initial rebuttal testimony, it is my opinion that MWW's controlling design parameter for its water supply capacity is a maximum day ratio of not less than 1.6 times its average daily pumpage.

While Mr. Behm criticizes my proposed maximum day to average day pumpage ratio, I note that in his supplemental direct testimony he recognized the reasonableness of using controlling design parameters for allocating facilities when he discussed his rationale for allocating transmission mains on the "controlling design parameter of max day". (SD12.18, lines 19-21.)

I also note that my proposed calculation of the maximum day to average day pumpage ratio is consistent with industry guidance. American Water Works Association Manual, M1, *Principles of Water Rates, Fees, and Charges,* states on page 52, that *"The appropriate allocation factors between base and extra capacity usually vary among systems and should be determined on the basis of the actual operating history or* ***design criteria for each system****." (Emphasis added)*

Q. What do you say in response to Mr. Behm's testimony about the decreasing peak demands experienced by MWW?

A. First, I would say that I believe establishing the maximum day system demand ratio based upon the controlling design parameter, as I propose, is more reasonable, and more consistent with cost based rate-making. A water system is built to meet these controlling design parameters, and water system costs should be allocated based upon these design parameters. Mr. Behm's proposal does not use the controlling design parameter to establish the maximum day system demand ratio to allocate costs, but rather uses current actual usage to establish the max day ratio. Current actual usage, however, is not what caused the MWW system to be built as it is. I do not believe Mr. Behm's approach to establishing the maximum day system demand ratio is as reasonable as my approach.

I do agree with Mr. Behm, however, that MWW's peak demands have been decreasing over time. In his testimony, Mr. Behm notes a persistent trend of decreasing peak demands experienced by MWW that is supported by 20 years of MWW operating data. I have conducted my own analysis of MWW operating data for the last 50 years, and this decreasing trend is also apparent in this analysis. Figure 2-1 (Exhibit 2.35) graphically illustrates this 50-year trend.

My analysis indicates that in 1960, MWW's maximum to average pumpage ratio was 1.75. After 50 years of operation, the trend analysis calculates a ratio of 1.46. This decreasing trend is further demonstrated by analyzing the data by decades. Looking at the previous decades back to 1960 provides an accurate and unbiased portrayal of the historical data that is not disproportionately influenced by weather patterns, short-term effects of MWW previous rate increases, or the larger overall economic conditions in Milwaukee or Wisconsin. Figures 2-2 through 2-5 (Exhibits 2.36 through 2.39)

graphically illustrate the maximum to average day ratio trends of the previous four decades. The statistical trend analysis of the data indicates the following:

Past 50 years (1960-2009): 1.46

Past 40 years (1970-2009): 1.47

Past 30 years (1980-2009): 1.45

Past 20 years (1990-2009): 1.42

Past 10 years (2000-2009): 1.42

It should be noted that in all cases, the historical trend analysis calculates maximum to average day pumpage ratios **greater** than the 1.40 ratio recommended by PSC staff.

Q. Since you agree with Mr. Behm that MWW's peak demands have been decreasing, why don't you agree with his estimated maximum day to average day pumpage ratio of 1.4?

A. While MWW's peak demands have been decreasing, and a max day to average day ratio based upon actual pumpage (as opposed to design) would be much lower than the ratio used in the 2007 rate case, a ratio of 1.4 is not reasonable and does not take into account other important reasons for variations in water usage from year to year such as weather, community growth and development, the economy, customer income levels, public education and price. One of the most significant factors when looking at extra capacity consumption by customers is the weather.

Two of the greatest influences on water usage in Wisconsin are summer month precipitation and temperature. It is the summer months of June, July and August when virtually all Wisconsin water utilities (MWW included) experience their maximum daily pumpage for a given year. If a summer is cool and/or wet, the maximum daily demand

for water will be reduced, and the max day to average day ratio for that year will also be reduced.

This weather influence was noted in Mr. Gorman's testimony (R.13.4 to 13.5), and concurred with by Mr. Behm in his supplemental direct testimony (SD.12.19, lines 11-14):

> *Mr. Gorman is correct that rainfall has a significant impact on year to year fluctuations in the max day to average day ratio. He is also right that an estimate of the max day to average day ratio based on too few years is prone to influence by variations in weather.*

As Mr. Behm recognized in his testimony, it is important that a max day to average day ratio based upon actual pumpage be based upon enough years to even out the year to year fluctuations in max day to average day ratios that would result from variations in weather. It is my opinion that a reasonable max day to average day ratio based upon actual pumpage should be based upon a large set of historical data from which highly anomalous years (in either direction) have been removed.

Q. Have you looked at the weather for the last 50 years to see whether it has had an impact on MWW's max day to average day ratio?

A. Yes. I looked at historical summer precipitation for the greater Milwaukee area and MWW's maximum day pumpage data for the last 50 years. Based upon this review, it is apparent that there is a consistent inverse correlation between the amount of rainfall in the Milwaukee area in the summer months (June-August) and MWW's maximum to average day pumpage ratio. This assertion is not only logical but it is also confirmed by a statistical analysis of the five decades of data. Figures 2-6 through 2-10 (Exhibits 2.40 through 2.44) graphically illustrate the historical maximum day pumpage ratio vs.

summer precipitation comparisons for MWW and the greater Milwaukee area. In each decade, the statistical linear trend results in a downward sloping inversely correlated relationship.

I also looked at historical summer temperatures for the greater Milwaukee area and MWW's maximum day pumpage data for the last 50 years. Based upon this review, it is apparent that there is a consistent positive correlation between the average summer temperature in the greater Milwaukee area in the summer months (June-August) and MWW's maximum to average day pumpage ratio. This assertion is also logical and confirmed by a statistical analysis of the five decades of data. Figures 2-11 through 2-15 (Exhibits 2.45 through 2.49) graphically illustrate the historical maximum day pumpage ratio vs. summer temperature comparisons for MWW and the greater Milwaukee/southeast Wisconsin area. In each decade, the statistical linear trend results in an upward sloping, positively correlated relationship.

Q. Does your analysis show any anomalies in this data?

A. Yes. In looking at the historical maximum day system pumpage ratios, the high ratios for 1988 and 1995, and the extremely low ratios for 2007, 2008, and 2009, stand out as anomalies.

The ratios for 1988, 2007 and 2008 all appear to be significantly impacted by precipitation. As Mr. Behm noted in his testimony, the high ratio for 1988 was affected by a severe drought in 1988. (D12.9, lines 10-11.) In contrast, the low ratios in 2007 and 2008 were affected by abnormally wet summers. The summer of 2007 was the wettest summer over the past 50 years. The summer of 2008 was the 4th wettest Milwaukee summer since 1960, and the 2nd wettest summer since 1978. Given the 50-year inversely correlated relationship between summer month precipitation and MWW's maximum to

average day pumpage ratios shown in Figures 2-6 through 2-10 (Exhibits 2.40 to 2.44), abnormal maximum to average day pumpage ratios for these years are to be expected. However, these years -- 1988, 2007, and 2008 -- represent years with unusual precipitation conditions and they should not be included in the determination of a maximum to average day pumpage ratio based upon normal conditions.

Weather impacts on water use also include variations in temperature. Higher temperatures typically equate to higher water usage; lower summer temperatures have a limiting effect on utility water usage – less evaporation and transpiration, less cooling water needed, less irrigation, etc. The years 1995 and 2009 also stand out as anomalies. 1995 had a very high maximum day to average day ratio; 2009 had a very low maximum day to average day ratio. Both summers had relatively average amounts of rainfall, but Milwaukee's 1995 summer was the second hottest (after 1988) in the past 50 years. The summer of 2009 was the 2nd coldest summer in Milwaukee since 1960, with only the summer of 1992 being colder. Also, in 2009, the City of Milwaukee was in the midst of the most serious economic recession since World War II. The historically poor economy coupled with the historically cold summer combined to further reduce discretionary water usage by Milwaukee customers in 2009, so again it is not surprising that the maximum day to average day demand ratio declined to historic levels for MWW.

Figure 2-16 (Exhibit 2.50) graphically illustrates MWW's maximum day to average day pumpage ratios over the past 50 years, and includes historical greater Milwaukee area summer precipitation amounts. Figure 2-16 (Exhibit 2.50) also indicates when the eight economic recessions occurred in the U.S. since 1960. By all accounts, the 2009 economic slowdown has been worse than any of those recorded since 1960. Figure 2-17 (Exhibit 2.51) graphically illustrates MWW's maximum day to average day

pumpage ratios over the past 50 years, and includes historical greater Milwaukee average summer temperatures. The figures denote the 50-year inversely correlated relationship between maximum day pumpage ratios and summer precipitation, and the positively correlated relationship between maximum day pumpage ratios and average summer temperatures.

Q. Does PSC staff's proposal address these anomalies when calculating the proposed maximum day system demand ratio?

A. No. In fact PSC staff's proposal now ignores the 1988 data and relies heavily on the years 2007, 2008, and 2009, and therefore these anomalies greatly skew the results of the PSC staff's analysis and recommendation of maximum to average day pumpage ratio.

Q. How should PSC staff take these anomalies into account?

I assert that using data from anomalous years is not reasonable. It is my opinion that the years 1988, 1995, 2007, 2008 and 2009 should be excluded from the proposed maximum day system demand ratio calculation because they are not representative years. 1988 is not representative because of the drought, and 1995 because of the abnormally hot summer. 2007 and 2008 were the wettest and second wettest summers in the last 30 years, and therefore, they are not representative because of the abnormal rainfall. 2009 is not representative because it was a year with the second coldest summer in 50 years that also included the worst economic conditions in the previous 70 years.

Q. If these years are excluded from the calculation, what is the impact?

A. I did an evaluation of MWW maximum day system pumpage ratios for the last 50 years, but this time ignoring the anomalous 1988, 1995, 2007, 2008, and 2009 data. Figures 2-18 through 2-22 (Exhibits 2.52 to 2.56) graphically illustrate the maximum to

average day ratio trends of the previous five decades. The statistical trend analysis of the data (excluding 1988 and 1995 data) indicates the following:

Past 47 years (1960-2006): 1.48

Past 37 years (1970-2006): 1.50

Past 27 years (1980-2006): 1.50

Past 16 years (1990-2006): 1.50

Past 6 years (2000-2006): 1.58

In all cases and with the anomalous year data removed, the historical trend analysis calculates maximum to average day pumpage ratios significantly **greater** than 1.40 as recommended by PSC staff. In fact, over the 2000-2006 period (excluding the anomalous 2007-2009 pumpage data), MWW peak water usage as evidenced by the ratio of maximum to average day pumpage displays an **increasing**, not decreasing trend, with the linear statistical trend calculating a ratio of 1.58.

Q. How does MWW's maximum day to average day pumpage ratio compare to similarly sized U.S. water utilities and larger municipal water utilities in the Midwestern U.S.?

A. An excellent data source for recent utility information is the 2008 Waster and Wastewater Survey (2008 Survey) that is produced and published biannually by AWWA and Raftelis Financial Consultants. This publication includes operational and financial data based on survey responses voluntarily provided by participating U.S. water utilities. For the 2008 publication, the survey was conducted in the third and fourth quarter of 2008. The objective of the survey was to have utility data that was current as of July 1, 2008. Operational and financial data included in the publication is for calendar year 2007 or the

most recent fiscal year. MWW participated in this survey and its 2007 survey data has been published in this book.

Exhibit 1 of the 2008 Survey contains a summary of water system characteristics of very large, large, and medium-sized water utilities in the U.S. The tables in Exhibit 1 of the 2008 Survey include average day sales and maximum day pumpage statistics for the 280 water utilities that participated in the survey. I have summarized information from the 2008 Survey regarding average day sales, average day pumpage, maximum day pumpage and ratio of maximum-to-average day pumpage for similarly sized and other larger Midwestern water utilities data in Table 2-1. (Exhibit 2.57.) It should be noted that the survey data included average day sales, not pumpage. To be able to compare MWW's maximum to average day pumpage ratio with other water utilities, a value of average day pumpage was estimated for the other utilities. Average day pumpage of the utilities listed in Table 2.1 (Exhibit 2.57) was estimated using a non-revenue water percentage of 16 percent, the same non-revenue water percentage reported by MWW for 2007.

Table 2-1 (Exhibit 2.57) includes 2007 pumpage data for 29 comparably sized U.S. water utilities. As noted in Table 2-1 (Exhibit 2.57), of these 29 water utilities with available maximum day pumpage and average day sales data, one has a ratio of greater than 3.0 (Memphis TN), six have ratios greater than 2.0, and 19 have ratios greater than MWW's calculated 1.55.

Of the 29 comparably sized water utilities in the 2008 Survey, the 2007 mean maximum to average day pumpage ratio was 1.77. MWW's 2007 value of 1.55 was 13% below this mean.

Q. How does MWW's maximum day to average day pumpage ratio compare to other large Wisconsin surface water utilities?

A. I did an evaluation of maximum day system pumpage ratios over the 2000-2006 period for the nine large surface water utilities in Wisconsin and compared them to MWW's ratio. The data for the analysis was obtained from the utilities' PSC annual reports as posted on the PSC's website. The other large surface water utilities' 2000-2006 mean maximum to average day pumpage ratios are as follows:

Appleton	1.50
Green Bay	1.59
Kenosha	1.56
Manitowoc	1.60
Milwaukee	**1.50**
Oak Creek	1.94
Oshkosh	1.40
Racine	1.85
Sheboygan	1.53

The 2000-2006 mean maximum to average day pumpage ratio for the other eight large surface water utilities in Wisconsin was 1.62. Six of the other eight utilities had maximum day pumpage ratios greater than Milwaukee's mean value of 1.50, and Appleton's was the same as MWW's. Only Oshkosh's ratio was lower.

Q. Please summarize your response to PSC staff's supplemental direct testimony on the calculation of MWW's maximum to average day pumpage ratio.

A. In summary, my position is that MWW system extra capacity ratio should be based upon design parameters because that is more consistent with cost causation principles.

However, if the MWW system extra capacity ratios are to be based upon actual usage, as opposed to design parameters, then actual usage data used to calculate the ratios needs to reflect the reasonable and characteristic water demands of MWW customers. Historical data from significantly anomalous years (1988, 1995, 2007-2009) should be excluded from the calculation.

Mr. Behm criticized the ratios used in the 2007 COSS because they were generated during an extreme drought in the summer of 1988. I agree with Mr. Behm that pumpage ratios should not be based upon anomalous values that were generated during extremely dry or hot weather periods. By the same reasoning, however, demand ratios should not be based upon anomalous values that were generated during exceedingly wet or cold summers.

PSC staff is recommending a 1.40 maximum day to average day demand ratio based upon unrepresentative data from a limited period with two years of unusually wet weather, and one very cold summer with extremely poor economic conditions. To establish demand ratios based upon these anomalous conditions would be to adopt the same fallacious logic PSC staff now recognizes should be rejected with regard to the prior ratios used in the 2007 COSS.

The actual pumpage data used to calculate the ratios needs to reflect the reasonable and characteristic water demands of MWW customers. If MWW system extra capacity ratios are to be calculated based upon actual data, it needs to be based on more rather than less data, and the data used needs to be reasonable and representative of the water demands of MWW customers.

The 1.4 maximum day to average day system pumpage ratio proposed by PSC staff is unreasonably low, and is based on limited atypical data. I propose using a

maximum day system demand ratio of 1.6 times average day that is based on the controlling extra capacity water supply design parameter for the MWW system, or 1.58 based on the most recent decade of actual maximum day to average day pumpage ratios, that exclude the anomalous data years of 2007-2009.

Q. Do you have any other issues you would like to address from the supplemental direct testimonies and revised exhibits?

A. Yes. I would like to address the issue of fire protection. In his supplemental direct testimony, Mr. Behm agreed that the original allocation of public fire protection expenses should not have been allocated based on max hour storage and distribution, which improperly allocates distribution related costs to wholesale customers. (SD 12.14, lines 15-19.) However, in his updated cost of service study he still allocates base system distribution costs to wholesale customers in Schedule 11A. (Exhibit 12.7, Schedule 11A.) I do not agree with this allocation of public fire protection distribution cost to wholesale customers.

As I indicated in my previous rebuttal testimony, no distribution costs - whether base distribution costs or extra-capacity distribution costs - should be allocated to wholesale customers because they derive no benefit from MWW's distribution system. In my previous rebuttal testimony, I noted Mr Behm's testimony where he said: *"Base distribution costs are not allocated to West Milwaukee or wholesale customers because they do not benefit from the MWW distribution system."* (D.12.15, lines 16-17.) Consistent with Mr. Behm's recognition that MWW's wholesale customers do not benefit from MWW's distribution system, no base system distribution costs should be allocated to the wholesale customers for public fire protection.

Q. Do you have any other comments you would like to make in response to the supplemental direct testimonies and revised exhibits regarding fire protection?

A. Yes. Mr. Behm made another significant change in the allocation of public fire protection costs in the PSC's revised COSS when he changed Milwaukee's public fire protection flows from 19,440,000 gallons to 12,960,000 gallons. (SD 12.15, lines 10-20.) I strongly disagree with this change.

In PSC's staff's original COSS, fire flow estimates were *"based on the average of the maximum and minimum Freeman's method, the National Board of Fire Underwriters' method, and the Kuickling method. All of these methods are based on the population served by the utility. Population information came from MWW, the wholesale communities, or, as a last resort, the 2000 census."* (D 12.19, lines 6-10.) I made no comment on the estimation of MWW fire flows in my rebuttal testimony as I agreed with the updated methodology which was a significant improvement over the methodology used to estimate 2007 fire flows. The improved fire flow estimates were based on several industry-recognized methodologies, and the estimated flows resulted in cost allocations that were much more reasonable, fair and equitable. No other party, including MWW, made a comment about MWW fire flows in their testimony.

PSC staff, apparently on its own initiative, chose to modify MWW's fire flow in its revised COSS. The revision changed Milwaukee's public fire protection flows for the purposes of this rate case from 19,440,000 gallons to 12,960,000 gallons, a reduction of 33 percent from the original Schedule 11A value. Mr. Behm explained he was recommending this change *"for the purpose of allocating public fire protection cost responsibility more reasonably."* (SD 12.16, lines 2-6.)

I completely disagree with this change. It is arbitrary, unreasonable, and discriminatory to the wholesale customers. PSC staff adopted a methodology for establishing fire flows for MWW and its municipal customers based on a combination of three well-accepted methodologies for estimating fire flow. Now staff has apparently decided it does not like the results of the methodology it chose because it results in an allocation of fire protection costs to Milwaukee that PSC staff believes is too high. So it appears that PSC staff proposes to arbitrarily adjust the numbers and lower Milwaukee's fire flow to a value that will provide a result that PSC staff believes is more "reasonable". The rationale for the fire flow number chosen (12,960,000 gallons) appears to have been arbitrarily selected to give PSC staff the result desired, but bears no relationship to the originally proposed and accepted methodology.

Hence, the significant improvement in estimating public fire protection used by PSC staff in the original COSS has now been modified in the interests of obtaining a fire protection cost allocation result desired by PSC staff. Arbitrarily reducing MWW's public fire protection flow amount by one-third while keeping MWW's suburban retail and wholesale customers' public fire protection flow amounts the same is not fair or reasonable, and it discriminates against the suburban retail and wholesale customers. It now shifts a significant burden of costs from City of Milwaukee customers to the suburban retail and wholesale customers for City public fire protection. Using the methodology originally proposed by PSC staff fairly and equitably allocates public fire protection costs to the customers that receive this service, which is entirely consistent with the Commission's cost of service ratemaking principles. Requiring the suburban retail and wholesale customers to subsidize the City retail customers for City of Milwaukee public fire protection costs directly contradicts Wisconsin statutory law as

established in Wis. Stat. § 196.60 which prohibits discrimination among utility customers.

In order to establish rates that are reasonable, fair and equitable, the City's public fire protection flow for rate making purposes must be set at 19,440,000 gallons, or the public fire protection flows of the suburban retail and wholesale customers must be similarly reduced by one-third.

Q. Do you have any other issues related to the supplemental direct testimonies that you would like to comment on?

A. The last issue I would like to comment on is unaccounted-for water. In my initial rebuttal testimony, I provided testimony on MWW's elevated levels of unaccounted-for water, and I proposed an adjustment applicable to this rate case. PSC staff did not provide a response to this testimony in its revised COSS or its supplemental direct testimony. I believe this issue should be addressed.

MWW has consistently had levels of unaccounted-for water in excess of 10 percent. MWW has reported increasing levels of unaccounted-for water over the past six reporting years, which appear to have stabilized at 14 percent of the total water pumped by the utility. (Exhibit 2.10.)

Q. How does MWW's unaccounted-for levels compare to other Wisconsin Lake Michigan surface water utilities?

A. I did an evaluation of unaccounted-for water values over the 2006-2009 period for the ten Lake Michigan surface water utilities in Wisconsin and compared them to MWW's performance. The data for the analysis was obtained from the utilities' PSC annual reports as posted on the PSC's website. The other surface water utilities' 2006-2009 average unaccounted-for water percentages are as follows:

Oak Creek	4.1%
Marinette	4.5%
Sheboygan	4.9%
Green Bay	6.8%
Manitowoc	7.7%
Kenosha	10.6%
Port Washington	11.2%
Racine	12.8%
Milwaukee	**13.9%**
Two Rivers	15.5%

The 2006-2009 average unaccounted-for water amount for the other nine Lake Michigan surface water utilities in Wisconsin was 8.7%. Eight of the other nine utilities had unaccounted-for water percentages less than MWW's average value of 13.9%. Only Two Rivers' four-year average value was higher. Table 3-1 presents a summary of the Lake Michigan surface water utilities' unaccounted-for water over the 2006-2009 period. (Exhibit 2.58.)

Q. Why are higher levels of unaccounted-for water a concern?

A. These reported higher levels of unaccounted-for water are of concern as they increase MWW's operating expenses in general, and variable costs in particular. The variable costs increased by unaccounted-for water include purchased power for pumping and treatment costs (chemicals). Both of these variable cost components have seen large increases in the recent past, especially treatment chemicals.

As more of MWW's operating expenses are being shifted by PSC to the base cost service function for this rate case, MWW's large retail industrial and wholesale

customers are being allocated a much greater share of operating service costs than in the previous MWW rate case. Per the revised PSC COSS, Schedule 7, 100 percent of Test Year cost of purchased power for pumping and chemicals is still allocated to base costs, which include variable operating expenses incurred for the production of non-revenue water. (Exhibit 12.7, Schedule 7.) Wholesale customers will be asked to share in a greater proportion of these non-revenue water production costs, but will have no means or authority to control or reduce the elevated level of non-revenue water produced every year by MWW.

Q. Why is it not reasonable for the wholesale customers to share in the increased variable costs resulting from MWW's unaccounted-for water?

A. Typically most unaccounted-for water is generated within a utility's distribution system. Unaccounted-for water that is lost in the distribution system is primarily due to leaks at customer services, hydrants, and other connections to distribution mains. Based on benchmarking data obtained from Bruce Schmidt of PSC, MWW reported 581 water main breaks, and 197 service breaks, in 2009. MWW reported 553 water main breaks and 160 service breaks in 2008. All of these water main breaks resulted in lost water, and the waste of expensive treatment chemicals and electrical power expense.

Wholesale customers have to account for unaccounted-for water in each of their own water systems. Furthermore, as a wholesale customer of Milwaukee, each of the wholesale customers pay Milwaukee for unaccounted-for water lost from their own distribution systems. Wholesale customers should not also be required to bear the costs of elevated unaccounted-for water amounts from MWW's distribution system.

Q. What relief are the wholesale customers seeking from the Commission related to MWW's unaccounted-for water?

A. The wholesale customers request that the costs for MWW to pump, treat and distribute unaccounted-for water above the 10 percent benchmark value be apportioned to retail customers only. I estimate that the added variable costs incurred by MWW for having unaccounted-for water above the 10 percent benchmark results in more than $100,000 in service costs allocated to the wholesale customers. PSC staff should reduce the allocated service costs to wholesale customers by this amount in its proposed rate design, providing an additional financial incentive to MWW to proactively address the elevated levels of non-revenue water that is treated and pumped every year. This adjustment is discussed in more detail in my rebuttal testimony. (R.2.17 to R.2.18.)

Q. Does this conclude you supplemental rebuttal testimony?

A. Yes.